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ABSTRACT

Learning modules offer the advantage of improved student knowledge through demonstrated competence with the instructional materials. Separate lessons are delivered with quizzes available after each lesson. Multiple quiz forms are necessary. When the students believes he is prepared, the student requests and takes the quiz. A standard level of performance, such as 85%, is required to pass; but, several attempts may be made to attain that level of performance. Final grades are based upon the number of lessons successfully completed. Student reactions to this teaching method used in a physical geography laboratory and in earth science have been positive; however, some mechanism to promote timely completion is needed. A copy of a questionnaire given to students about this method of instruction is included. (Author/DB)

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Individualizing Instruction through Learning Modules

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"Individualizing Instruction through Learning Modules," Miriam Helen Hill, Indiana University Southeast, 4201 Grant Line Road, New Albany, Indiana 47150.

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Individualizing Instruction through Learning Modules

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Paper presented at the National Council for Geographic Education annual meeting in Hershey, Pennsylvania, October 12, 1989.

With the traditional grading system, average and poorer students demonstrate only partial knowledge of the instructed materials. Missed questions may result from guesses based upon a limited knowledge base or erroneous understandings. The opportunities to rectify the inaccuracies are limited and should the student during the course acquire the understanding, the grade remains impacted.

Individualizing instruction through learning modules offers a means of increasing the accuracy of the acquired knowledge and a system of grading that promotes mastery of material while not sacrificing course content. The philosophical premise of this method is learning and comprehension of part of the material is more desirable than covering all of the material but with limited and inaccurate understandings throughout. Thus, the emphasis is on increased comprehension of the covered material. What is not covered remains as an unknown or vague area of knowledge without the sense of "I had that in class, so I know about it."

Separate lessons or small units of material are presented with short quizzes available after completion of class presentations. Multiple quiz forms are prepared to eliminate collusion and to assure competency. When the student feels adequately prepared, he or she elects to take

the quiz. A standard level of performance, such as 85%, is required to pass the lesson. If not achieved on the first attempt, the student may review the material and try again. The number of attempts allowed can be limited. The final grade is based upon the number of lessons completed successfully.

This grading method has been applied to one earth science and two physical geology classes and partially to a physical geography laboratory. In each, the number of individual lessons or units was determined. Assignments for each were then designated.* The regular course schedule was used to determine when each lesson would be covered in class. Each of these courses has a laboratory component when students are working independently, so sufficient time for quizzes was available. Otherwise, time ordinarily devoted to testing can be dispersed through the schedule allowing short periods at the beginning or end of classes for quiz taking.

The grading system is based on the number of lessons to be completed at the required performance standard. For the earth science and physical geology courses, an A was designated as covering all of the previously required course material. With a quiz performance standard of 85%, this equaled the lowest level of the curve generally used in the courses. For a B, 90% of the lessons was required. A C required that 80% of the lessons be achieved at the 85% level. A D required those standards for 70% of the lessons. Thus, to pass the course 13 of 19 lessons were needed. These could be completed by passing all of the first lessons, failing a few lessons but passing the necessary number, or

passing sufficient selected lessons.

The multiple quizzes were generated by producing a test file for each lesson. Random or selected questions were distributed between multiple forms of the quizzes. While some computerized test banks can easily perform this function, my obsolete TRS 80 Model 4 is not so equipped. Therefore, after word processing the test bank with the answers on the left margin, each question was cut off as a strip, glued to a form coded page, and the answer margin cut away. The questions were then numbered. To administer, when a student identifies which quiz is desired, a page is removed from a numbered folder, slipped into a clear protector cover, and handed to the student. When it is returned, the answer strip is retrieved from the folder and the answers are quickly graded. My quizzes generally contain twenty questions; so to pass, a student must miss no more than three. Missed answers are marked, the score of OK or retake indicated, and it is handed to the student to be reviewed and returned so that the grade can be recorded. Three attempts are allowed.

The greatest difficulty encountered has been prompting timely completion of the material. Designating a penalty date has been somewhat beneficial. During the regular semester, if a quiz is taken after the third session beyond the completion of the lesson, a one question penalty is imposed. In other words, if the quiz is taken late, only two questions instead of three may be missed. This encourages time management but still allows the student flexibility, particularly in the event of illness or other complications.

Student responses to this grading system have been generally positive. A questionnaire was administered to seventeen students in the spring 1989 earth science class and to eight students in the six week summer session physical geology class. Some questions asked about the class itself. 48% found the class moderately difficult (22), but 12% admitted to not reading the textbook chapters at least once. (8) Only 8% did not find the goals clearer than in traditionally graded classes (9) and 8% were undecided. 20% felt the class was somewhat chaotic with everyone working independently (12).

Other questions asked about study habits and time management. 52% would have studied the same amount if there had been five exams, while 24% would have studied less and an equal number would have studied more. (18) 76% claimed that they did not put off studying (15) but 56% said they fell behind compared to 40% that did not (16). 52% had difficulty budgeting their time, but 40% did not (21). The point penalty helped 52% and did not help 24%. (19) The summer class felt more pressured than the spring class (5).

In regard to the quizzes themselves, everyone recognized that the questions were standard test questions (7). 25% took quizzes when they were not ready and 64% did not (17). 86% believed that if they did not know the material, they did not pass the lesson (10), and 92% felt when they did know it, they did pass (13). Whereas 44% stated memorization was sufficient and 44% said it was not, 24% responded that memorization was more important than understanding, and 56% said understanding was more important. Nevertheless, 92%

agreed that comprehension was needed.

In summation, 44% believed they got a higher grade than with the traditional system and 36% were undecided. The results indicated that, whereas 20% preferred the traditional system and 44% were undecided, 48% preferred the modular approach. 60% believed they learned more with this system, while 28% were undecided and only 12% disagreed.

A great advantage of this system is its flexibility. 20% specifically said that they like the way it allowed them to work at their own pace; however, 72% warned future students not to get behind.

With this system, the grade average attained by 37 students has been 2.6. The average grade attained by 106 students in the traditionally graded classes was 2.14. This concept is adaptable to many types of classes, offers a practical alternative to traditional grading, and facilitates individual initiative. It does compel the students to learn the material and requires them to demonstrate their competence to a prescribed standard.

*Study guide materials were also clearly grouped into these individual lessons. See, Miriam Helen Hill, "Are Teacher Prepared Study Guides Worth the Effort?" paper presented at the annual meeting of the National Council for Geographic Education, October 6, 1988.

Please complete the following questionnaire comparing the modular approach (quiz to be passed on each lesson) with a traditional approach (three to seven examinations upon which the grade depends). Circle or write in a response as indicated. Do NOT write your name on this paper.

1. Course:_____
2. Semester:_____
3. Year:_____

4. Toward what grade are you working? A B C D F

5. I felt more pressure with this grading system than with the traditional.
strongly agree agree undecided disagree strongly disagree

6. The material in this class was more organized than that in traditionally graded classes.
strongly agree agree undecided disagree strongly disagree

7. The questions in the test file were questions which might have been used on traditional examinations.
strongly agree agree undecided disagree strongly disagree

8. I usually read the chapter in the textbook at least once.
strongly agree agree undecided disagree strongly disagree

9. The goals in this course were clearer than the goals in traditionally graded classes.
strongly agree agree undecided disagree strongly disagree

10. When I felt I did NOT know the material, I passed the quizzes.
strongly agree agree undecided disagree strongly disagree

11. I usually did NOT do the laboratory work.
strongly agree agree undecided disagree strongly disagree

12. The class sessions were chaotic with everyone working independently.
strongly agree agree undecided disagree strongly disagree

13. When I felt I knew the material, I passed the quizzes.
strongly agree agree undecided disagree strongly disagree

14. I feel I learned more with this approach than I would have with the traditional approach.
strongly agree agree undecided disagree strongly disagree

15. I put off studying for this class.
strongly agree agree undecided disagree strongly disagree

16. I fell behind in this class.
strongly agree agree undecided disagree strongly disagree

17. I took quizzes when I was not yet prepared for them.
strongly agree agree undecided disagree strongly disagree

18. If this course would have had five tests instead of the individual quizzes, I would have studied:
a lot more more the same amount less a lot less

19. The two week penalty helped me keep up with course work.
strongly agree agree undecided disagree strongly disagree

20. Memorizing the answers was sufficient for passing the quizzes.

strongly agree | agree | undecided | disagree | strongly disagree

21. I had difficulty budgeting my time for this course.

strongly agree | agree | undecided | disagree | strongly disagree

22. For a laboratory science course, this course is:

very difficult | moderately difficult | average | somewhat easy, but time consumptive | very easy

23. Quizzes required comprehension of material.

strongly agree | agree | undecided | disagree | strongly disagree

24. The modular approach allowed me to obtain a better grade than I would have with the traditional grading system.

strongly agree | agree | undecided | disagree | strongly disagree

25. To pass the quizzes, memorization was more important than understanding.

strongly agree | agree | undecided | disagree | strongly disagree

26. I prefer the traditional testing to this modular approach.

strongly agree | agree | undecided | disagree | strongly disagree

Comment:

27. What did you most like about this grading system?

28. What changes would you recommend?

29. What advice would you give to students beginning a course with this grading system?

LEARNING MODULE QUESTIONNAIRE

G100-G103 t=17-t=8

question	SA	A	U	D	SD
grade	8-6	7-1	2-1		
modular more pressure	3-3	3-2	2-1	5-2	4-0
this more organized	5-1	8-6	4-0	0-1	
standard test questions	9-2	8-6			
read text	5-1	10-6		2-1	
clearer goals	4-2	10-5	2-0	1-1	
not know, passed		1-0	2-1	10-6	4-1
did not do lab		1-2	2-0	6-5	8-1
chaotic class	1-0	0-1	2-0	8-5	5-2
knew it, passed	8-3	7-5		1-0	
learned more	2-1	7-5	7-0	0-2	1-0
put off studying	1-0	4-1		9-4	3-3
fell behind	2-0	9-3	1-0	4-2	1-3
took quiz but not ready		3-3	2-1	10-3	2-1
if 5 tests, study more	1-0	5-0	9-4	2-2	0-2
penalty helped	1-1	6-5	5-1	5-1	
memorized	1-2	5-3	3-0	8-2	0-1
difficult manage time	2-2	7-2	1-1	6-3	1-0
lab science difficult	3-0	10-2	4-2	3-1	
needed comprehension	8-3	8-4	2-0	0-1	
higher grade with this	2-3	4-2	9-0	1-3	1-0
memorize more important	1-1	2-2	5-0	7-4	2-1
prefer traditional	1-1	0-3	7-1	4-2	5-1